**Excerpts from “Creating Shared Instructional Products:**

**An Alternative Approach to Improving Teaching”**

Anne K. Morris and James Hiebert

January/February 2011, *Educational Researcher*, v. 40, # 1, p. 5-14

What can be done to solve these two problems: the large variation among classrooms and the lack of improvement over time? From our point of view, the problems are related. Making progress on the first provides the foundation for solving the second. In this article, we propose a way of representing these problems, and their solutions, that provides an alternative to most conventional approaches. To preview our proposal, we interpret the need to reduce variation in classroom instruction as not only a moral imperative but a scientific one as well. A significant obstacle to improving the quality of instruction on a large scale is the lack of consistency in the details of instruction from classroom to classroom. If instruction varies from classroom to classroom, there is no way of accumulating evidence about what works and what does not across different classroom settings. There is no way of developing a “science of improvement” (Kenney, 2008, p. 140) that yields the kind of knowledge needed to build improvements upon improvements over time.

**System Features That Enable the Construction of Knowledge Products**

*Enabling Feature 1: Shared Problems Across the System*

The first enabling feature for developing jointly constructed knowledge products is sharing ownership of problems that the products help to solve. Unless all participants in the system are working to solve the same problems and unless solving them improves everyone’s work lives, there is no compelling reason for them to work together to build problem-solving products.

*Enabling Feature 2: Small Tests of Small Changes*

The second feature addresses the research methods that are commonly used to test and revise shared products.

We simply wish to distinguish between large-sample randomized control trials that establish a treatment as more promising than its competitors and the **empirical tinkering**—*the repeated* *small tests of small changes*—required to refine and adapt a treatment to work effectively in multiple settings. A range of methods can and should be used to investigate different aspects of the knowledge-building enterprise. But we wish to highlight the value of small tests of small changes because

(a) this set of approaches is most frequently associated with the testing and revising of the products we have in mind, and

(b) this kind of empirical tinkering often is ignored or dismissed in descriptions of *scientific* approaches to knowledge building.

*Enabling Feature 3: Multiple Sources of Innovation*

One reason that *jointly* created products can effectively help to solve a profession’s problems is that the knowledge used to build the products is harvested from participants across the system, participants who likely possess different kinds of knowledge. Taking advantage of different kinds of knowledge and different kinds of expertise results in products that are more useful and of higher quality than products created by individuals working alone. In addition, products that are jointly constructed are owned by all the participants, which, in turn, results in increased use of the products and increased commitment to improve them over time.

…

**The Nature of Instructional Products**

With the examples of improving health care by studying treatment protocols and improving teaching by studying lesson plans, we can now summarize several key points and extend our argument by making several additional observations. We begin by defining what we mean by *instructional products*. Because we set out to address the dual problem of variation in instructional practice and the lack of improvement in such practice over time, we focus on the instructional products for teaching that we believe most directly affect classroom practice: (a) specially annotated instructional (lesson) plans designed with specific learning goals in mind that describe all aspects of classroom instruction believed to affect students’ opportunity to achieve the learning goals and that contain all the information needed to implement the plan as described and (b) assessments that measure whether students are achieving the learning goals. The kind of annotated lesson plans we have in mind are rich enough and complete enough to constitute a fully developed curriculum…

*Key Characteristics of Useful Instructional Products*

The purpose of the instructional products we describe is to help teachers help students achieve specified learning goals. Consequently, **a first characteristic of useful instructional products (we will call them *annotated lesson plans* and *assessments*) is that they are created around particular learning goals.** The products are useful for teachers if and only if teachers are trying to help students achieve these learning goals. Another way of saying this is that *learning goals for students are the shared problems of instructional product systems*.

A second characteristic of useful instructional products is that they are at a grain size that can guide classroom instruction. Because we are proposing instructional products that can reduce variation in instruction across classrooms and improve instruction over time, **the products must be detailed enough to directly** **affect practice**.

**A third characteristic of useful instructional products is that they are testable and improvable**. They must be tested against students’ achievement of the learning goals. Using small tests of small changes, information can be gathered for revising the lesson plan and testing it again. Repeatedly testing lesson plans using empirical data on students’ learning provides a mechanism for vetting their quality.

**A fourth characteristic of useful instructional products is that they are accessible to teachers when needed**. In the current U.S. system, most research-based information is difficult for teachers to access on demand because it often is stored on library shelves. Well-specified learning goals provide an answer to this challenge by indexing annotated lesson plans according to learning goals. The Internet provides many attractive possibilities for storing, searching, and accessing annotated lesson plans and assessments when needed.

The four characteristics we have identified (through the examples of treatment protocols produced through health care improvement and annotated lesson plans produced through lesson study)…work together to reduce variation in instruction from classroom to classroom and improve students’ learning over time.

*Using Instructional Products as Intended*

Variation in instruction among classrooms is introduced not only by teachers teaching toward different goals using different plans but also by teachers implementing the same plans in different ways. Implementing the same plan in different ways might be due to differences in the expertise of the teacher or differences in the context that prompt teachers to change the plans. How does the system we propose handle these variations?

*Variations due to differences in expertise.* Annotated lesson plans contain knowledge of two kinds: what to do and why/how to do it that way. What to do offers prescriptions that teachers can implement; why/how to do it that way provides a rationale or local theory for why the prescription might work, along with information that teachers will likely need to implement the plan as described…[These] lesson plans include information for teachers that is designed to help novices implement the lessons as effectively as experts.

*Variations due to contextual differences.* Variations in how lessons are implemented using the same annotated lesson plans might be due to differences in classroom variables, such as differences in the way students respond to the instructional activities. It is likely that some variations in implementation are appropriate to most effectively

help these students achieve the learning goals. How does the system we propose deal with variation due to these factors?

First, **it is not the variation among students that is the problem; it is the idiosyncratic variation among the instructional treatments that prevents accumulating knowledge about better instruction.** Consequently, it makes sense to study standardized instructional treatments across variable settings, examining the data to learn about the effects of the contextual variables in the settings. Understanding the effects of the contextual variables then enables adapting the treatment to fit the context. We conjecture that patterns will emerge that suggest several variations of annotated lesson plans keyed to local conditions.

That instructional products will likely be adapted for local settings means that the rationales for these decisions are an important part of the knowledge contained in the products. The rationales for the prescriptions, or the small, local theories about why particular activities work well in this setting (and better than other activities that have been tried), provide information teachers can use to fine-tune the products even further for their contexts without introducing “lethal mutations.” These theories-of-action, or “practical arguments,” provide an arena within which teachers can reason about their practice.

*Two additional observations about instructional products:*

1. Developing products that serve this dual purpose—of prescribing instruction that works well in actual classrooms, and proposing local theories that explain the instructional successes and guide adaptations to fit other contexts and improve over time—is characteristic of design research. The similarities reinforce our suspicion that the product-building systems we are describing are consistent with, rather than at odds with, other emerging efforts to describe processes that create useful knowledge for classroom teaching.
2. A final observation about instructional products addresses the question of whether they support *good* teaching. We have not defined good teaching; indeed, what counts as good teaching is a contested issue in education. Even if the knowledge-building system works as we envision, educators are likely to disagree about whether instruction is improving. In our view, good teaching can be defined only in relation to specific learning goals. In the system we propose, whether one judges teaching to be good and/or improving depends entirely on whether one values the learning goals toward which teaching is directed. If the learning goals are valued and students are achieving them more effectively, then teaching is improving. The system we propose is neutral with respect to learning goals; it is designed to improve the effectiveness of teaching with respect to any specified learning goals.

…

**Different Roles Played by Different Educators**

…Currently, educational professionals with different kinds of knowledge create different products (research articles, textbooks, lesson plans). Students rarely benefit from the scope of knowledge stored separately in different forms and places. Furthermore, few venues exist that enable the integrating or blending of knowledge in forms that teachers actually use and students actually encounter. There is simply no way that the most effective instructional products can develop in a system that segregates the products created by people with different kinds of knowledge.

Different products are a direct consequence of the fact that different groups in the educational system are trying to solve different problems. Due to the differences in problems addressed and methods used, the kinds of knowledge produced by different groups, say researchers and teachers, are often seen as qualitatively different. At the least, the products created by these groups are separate, with little, if any, overlap or integration. What would it look like if different groups used their special kinds of knowledge to solve different aspects of the same problems?

To be explicit, we provide the following descriptions simply to note that such distributions of effort are possible, although numerous other configurations can be imagined:

**1. Clarify and interpret learning goals.**

* Based on students’ responses, teachers might further unpack the components of the lesson learning goals (proposed by curriculum writers) to identify the concepts and skills students need to achieve the goals.
* Researchers might examine the connections among the learning goals across lessons and create coherent sequences or progressions of learning goals.

**2. Develop curricula and lesson plans.**

* + Curriculum writers, with the assistance of researchers, might develop first drafts of lesson-level curricula that incorporate relevant research findings.
  + Teachers and researchers might develop testable conjectures for improving curricula based on repeated tests across multiple classrooms.

**3. Develop local instructional theories.**

* + Teachers might test local theories by implementing and then refining and modifying them, identifying the effects of local contextual conditions.
  + Researchers might create local theories by taking into account the effects of instructional interventions across individual classrooms.

**4. Design and apply assessments to gather relevant student data.**

* + Teachers might use informal assessments to provide immediate feedback on the effectiveness of particular instructional activities.
  + Researchers might create common assessments to test the shared products used across classrooms to enable sharing data from replications and assessing improvements under different contextual conditions.

It is clear that teachers, researchers, and curriculum developers will bring different kinds of knowledge to these tasks. Although the boundaries are slippery, it seems clear that researchers or outside educators will need to fill in subject matter expertise and research design expertise, whereas teachers will need to provide classroom delivery (pedagogical) expertise as well as knowledge of contextual conditions. In the end, the criterion that must be used to sort out the best roles for researchers and teachers is whether the work done by every participant contributes to the improvement of products and, in turn, the better achievement of learning goals by students. Because little precedent exists for systems in which all participants are equally committed and equally accountable, it is impossible to say exactly what roles will be optimal. Those suggested above might be a good starting point.

**Conclusion**

In simplest terms, our argument has been that classroom teaching will improve, for all students, only if the variation in instructional practices across classrooms is reduced and the quality of instruction improves over time. We claim that a promising approach, and one not yet tried seriously in the United States, is to jointly build instructional products that can be used by all teachers, continually tested, and refined. Although not an entirely foreign concept in American education, building public, changeable instructional products is likely to take hold only if the minimal set of features we identified here becomes part of the education culture.